AMENDMENTS TO THE SPECIFICATION:

Please add the following at page 1, after the title and before line 1:

BACKGROUND

1. Technical Field

Please amend the following title at page 1, line 6:

~~Background~~

2. Related Art

Please amend the following title at page 5, line 7:

~~Summary of the invention~~

BRIEF SUMMARY

Please amend the paragraph beginning at page 5, line 8, as follows:

Exemplary ~~E~~embodiments of the invention aim to improve on what is possible with existing CMSs by allowing the automatic establishment of a sensor-based CMS for ill-defined domains using a high-dimensional sensor data space. Specific exemplary embodiments of the invention aim in particular to: (i) provide means to create"normality models"that allow a system to learn normal conditions automatically for any sensor in the absence of any knowledge about abnormal conditions; (ii) detect abnormal situations automatically by comparing current sensor signatures with signatures predicted in the light of normality models; (iii) allow sensors to be organised into a sensor network, whereby sensors can form sensor groups which act as meta-sensors and perform sensor data fusion; (iv) provide an intelligent data analysis module that analyses data from a sensor network, raises alarms based on the detection of abnormal conditions and adapts the normality model based on user feedback.

Please amend the paragraph beginning at page 6, line 34, as follows:

Exemplary ~~E~~embodiments of the invention allow the organisation of a multitude of sensors into an effective sensor network. Sensors can form sensor groups that combine data from several sensors by sensor data fusion. For each sensor or sensor group normality models may automatically be built up. A normality model allows the system to learn what normal conditions are for any sensor or group of sensors in the absence of any knowledge about abnormal conditions. By using normality models to predict the data to be observed by a sensor or sensor group and by comparing this prediction with the actually measured data the system can automatically detect abnormal conditions without the need for any confirmed knowledge about abnormal conditions to be received from an operator such as a human expert or an automated expert system.

Please amend the paragraph beginning at page 7, line 9, as follows:

Exemplary ~~E~~embodiments of the invention provide an"intelligent"data analysis unit that analyses data from a monitoring system such as a sensor network, causes alarms to be raised based on the detection of abnormal conditions, and adapts the normality models based on user feedback relating to normal conditions. If some knowledge about abnormal conditions is also available, this can also be used to improve the detection accuracy based on the predictions from the normality models, but systems according to embodiments of the present invention are capable of functioning independently of, and thus in the absence of, any data from an operator relating to abnormal conditions.

Please amend the paragraph beginning at page 7, line 17, as follows:

Exemplary ~~E~~embodiments of the invention allow for the provision of an Intelligent Data Analysis unit (IDA unit) that manages a sensor network and constantly analyses sensor data in

order to detect abnormal conditions in the sensor data automatically. The unit contains a mechanism to automatically learn what normal sensor conditions are. The unit maintains a list of sensors that submit data to the unit by suitable communication means (e. g. radio, internet (IP) network, or direct connection). The unit can organise sensors into logical sensor groups. A sensor group acts as a meta-sensor and can be monitored independently from other sensors and sensor groups. A sensor group contains at least one sensor. Any sensor of the sensor network can be a member in any number of sensor groups. Sensors of the sensor network send data to the unit, and depending on their complexity sensors may also receive data from and send data to other sensors within the network.

Please amend the paragraph beginning at page 8, line 16, as follows:

According to exemplary embodiments of the invention, however, it is not necessary for there to be a strictly separate"learning phase". Provided that some confirmation information relating to normal conditions may be received from an operator during actual monitoring of the dynamic system, such embodiments are capable of deriving and updating their normality models and/or difference functions as appropriate on the basis of data received from a monitoring system during actual monitoring of the dynamic system.

Please amend the paragraph beginning at page 10, line 30, as follows:

IDA units according to exemplary embodiments of the present invention are thus capable of using user feedback related purely to normal conditions to retrain the normality model.

This may be necessary, if an alarm is being raised although the user considers the situation to be normal. The IDA unit may also use examples to learn specific alarm situations, if the operator can provide this information. The IDA unit can also use prior knowledge of the user to support and shorten the learning phase. The user can provide fuzzy rules describing normal

and/or abnormal situations and the IDA unit may then use neuro-fuzzy learning algorithms to learn additional rules and/or refine the existing rules for each sensor.

Please amend the paragraph beginning at page 11, line 5, as follows:

~~Brief Description of the Drawings~~

BRIEF DESCRIPTION OF THE DRAWINGS

Please amend the paragraph beginning at page 11, line 29, as follows:

~~Detailed Description of the Invention~~

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

Please amend the following title at page 17, line 1

~~CLAIMS~~

WHAT IS CLAIMED IS: